

The diverse land snail community of Bruxner Park on the north coast of New South Wales, Australia

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Abstract

Australia has a diverse land snail fauna of international significance. This short paper presents the results of a study of the land snails of Bruxner Park, a small conservation reserve near Coffs Harbour on the NSW North Coast, and provides information on the range of interesting land snail species found there. Bruxner Park is one of the richest known sites for land snail diversity on the NSW North Coast, with 30 species recorded to date and more likely to occur there. This high diversity is particularly notable given the acidic, calcium-poor nature of the soils present. (*The Victorian Naturalist* 124 (5), 2007, 306-309)

Introduction

Australia has a rich native land snail fauna with an estimated several thousand species in 25 families (Stanisic 1994; Stanisic and Ponder 2004). The fauna comprises an ancient Gondwanan element (probably over 100 million years old) and a relatively recent (less than 15 million years old) Asian element (Smith and Kershaw 1979; Bishop 1981). The majority of species occur in rainforests, where long-term moisture stability and the diversity of available microhabitats have supported the evolution and survival of complex land snail communities (Stanisic 1994). The rainforests of the north coast of New South Wales (NSW) provide some of the most interesting areas to study land snails in Australia (Shea 1978). An example of the land snail community found in one such area is briefly presented here to help promote a wider appreciation of the region's diverse and significant land snail fauna.

Study Area and Methods

Bruxner Park Flora Reserve (30°15'S, 153°06'E) is a 407 hectare conservation reserve near the city of Coffs Harbour, in Gumbaynggirr Aboriginal country in the NSW north coast bioregion. The vegetation of the reserve is mainly subtropical rainforest and moist eucalypt forest with a few small areas of dry eucalypt forest, on an underlying geology of metamorphosed shale. The climate is subtropical maritime, with an average annual rainfall of about 2000 mm, peaking in late summer/autumn (Forestry Commission of NSW 1989).

A field study of the land snails and slugs of Bruxner Park was done between December 1998 and November 2001, sampling the range of vegetation types present. Survey methods comprised lifting and replacing ground debris such as logs and loose rocks, hand-raking leaf litter, examination of tree trunks and vegetation and searching around rocks used as anvils by the Noisy Pitta *Pitta versicolor*, as well as searches by torchlight for active animals on wet nights. Searching was done over a total of about 35 hours on about 60 separate days or nights. Reference was also made to the Australian Museum (Sydney) and Queensland Museum (Brisbane) collections for records of additional species from the study area.

Results and Discussion

Thirty species from eight families were recorded in Bruxner Park (see Table 1). This is a high species diversity for a site in the NSW north coast region. Typical land snail species diversities in the region are 10–20 species for rainforest sites and about five species for dry eucalypt forest sites (Stanisic 1994). The few sites in the region where rainforest occurs on limestone have had up to 39 species recorded per site (Stanisic 1997). Non-limestone rainforest sites can also have very high land snail species diversities but, with population densities lower than in limestone areas, detecting all species present takes a greater search effort (De Winter and Gittenberger 1998; Schilthuizen and Rutjes 2001). Overall land